

Applicant : Manfred Lenhart
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IN THE CLAIMS:

Please cancel Claims 1-33. Please enter new Claims 34-67.

1-33. (cancelled)

34. (new) A multi cylinder thick materials pump for providing concrete comprising:
at least two feeding cylinders for feeding thick material from a pre filling container into a feed line;
a shift valve for alternatively connecting the feeding cylinders with the feed line associated with it;
the shift valve comprising at least two moveable valve bodies, each body comprising a transfer section between each of the feeding cylinders and the feed line, the shift valve being connected downstream of the feeding cylinders to a collector tube, and
the shift valve comprising two substantially translatorically movable control slides, each slide including a straight transfer section for connecting each of their associated feeding cylinders with the feed line and a blocking section blocking the connection.
35. (new) A thick materials pump according to claim 34, wherein the shift valve includes a guidance structure for the control slides, the guidance structure having openings for passing through thick materials flows.
36. (new) A thick materials pump according to claim 35, further comprising a pre filling container, said control slides each having an inlet opening, and the guidance structure being mounted into the pre filling container in a fixed manner so that the control slides and their inlet openings are always in contact with the thick material filled in.
37. (new) A thick materials pump according to claim 35, wherein the guidance structure is substantially shaped as a box or a frame, the box or frame forming a separate guide for each control slide.

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38. (new) A thick materials pump according to claim 34, wherein the control slides can each be positioned within the guidance structure in at least two different positions, the two positions including a transfer position wherein the feeding cylinder can eject into the collector tube, and a blocking- or inlet position wherein the feeding cylinder can suck thick material out of the pre filling container.

39. (new) A thick materials pump according to claim 34, wherein the control slides are substantially identically.

40. (new) A thick materials pump according to claim 34, wherein at least one of the control slides is divided into three sections along its stroke, one of the three sections being the transfer section and another of the three sections being an inlet section.

41. (new) A thick materials pump according to claim 40, wherein the blocking section is provided between the transfer section and the inlet section.

42. (new) A thick materials pump according to claim 40, wherein the sections of the control slides are provided as single modules and connected to each other in a disconnectable manner.

43. (new) A thick materials pump according to claim 34, wherein the guidance structure includes at least one flap for removing thick material from the transfer section of one of the control slides.

44. (new) A thick materials pump according to claim 43, wherein the flap is a common flap for both of the control slides.

45. (new) A thick materials pump according to claim 34, wherein the control slides are drivable and positionable independently from each other.

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46. (new) A thick materials pump according to claim 45, further comprising a drive for the control slide, the drive including a tandem lifting cylinder array within two serially connected lifting cylinders, each of the cylinders having a stroke corresponding to the travel of the control slide from one position into a neighboring position.

47. (new) A thick materials pump according to claim 45, further comprising a drive for the control slide, the drive including a telescoping lifting cylinder with two lifting stages, each of the stages of the cylinders corresponding to the travel of the control slide from one position into a neighboring position.

48. (new) A thick materials pump according to claim 46, wherein the lifting cylinders are located in parallel next to the control slides, said cylinders being coupled with the slides via consoles, and the guidance structure including the control slide guides for the consoles.

49. (new) A thick materials pump according to claim 34, wherein the transfer section of each control slide comprises a cylindrical tube with the same diameter as the feeding cylinders.

50. (new) A thick materials pump according to claim 40, wherein a rerouting system is provided in the inlet section of at least one control slide.

51. (new) A thick materials pump according to claim 34, further comprising a control unit and position indicators, the position indicators providing to the control unit momentary positions of the shift valve and the control slides as well as of the feeding pistons of the feeding cylinders, and the control unit controlling drives of the control slides and of the feeding pistons according to a predetermined time distance pattern in a cyclical manner.

52. (new) A process for operating a thick materials pump for continuous feeding comprising:

providing a thick materials pump, the pump comprising at least two open feeding cylinders with feeding pistons and a shift valve with control slides, which are controllable

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independently from each other and adapted to the motion of the feeding pistons, each control slide including at least one transfer section for connecting an associated feeding cylinder with a feed line and an intake section for sucking in thick material from a pre filling container through the associated feeding cylinder; and

controlling a synchronous travel phase of the feeding pistons in a cyclical manner while its at least two control slides are located in a transfer position, wherein its transfer sections connect the associated feeding cylinders to the feed line for preliminary simultaneous expulsion of thick material.

53. (new) A process according to claim 52, further comprising adjusting the feeding pistons in the synchronous travel phase to each other, so that the thick materials quantity pumped by the pistons simultaneously is approximately equal to feeding through one piston alone during the suction stroke of the respective other piston.

54. (new) A process according to claim 52, further comprising momentarily closing the opening of each feed cylinder at the beginning of the pump stroke of each feeding piston of each feeding cylinder through the blocking section of the control slides.

55. (new) A process according to claim 54, further comprising providing each pump stroke of a piston with a pre compression phase, a first synchronous phase, a pump phase, and a second synchronous phase.

56. (new) A process according to claim 52, further comprising driving both feeding pistons during the synchronous travel phase at the same speed.

57. (new) A process according to claim 52, wherein upon a pump stroke a transition phase with a stand still of a feeding piston during a continuing pump stroke of the other feeding piston follows.

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58. (new) A process according to claim 52, wherein the suction stroke of each piston is faster than its pump stroke, in particular between a transition phase and a pre compression phase.

59. (new) A process according to claim 58, further comprising providing each suction stroke of a piston with a start ramp and a stop ramp with a reduced velocity.

60. (new) A process according to claim 52, further comprising slowing down or stopping momentarily the control slides during the synchronous phases.

61. (new) A process according to claim 52, further comprising slowing down or stopping momentarily the control slides in a pre compression phase.

62. (new) A process according to claim 52, further comprising slowing down or stopping momentarily the control slides in a transition phase.

63. (new) A process according to claim 52, further comprising slowing down or stopping momentarily the control slides in a suction phase.

64. (new) A process according to claim 52, further comprising positioning the control slides in an operating position in the operational pauses of the thick materials pump, and allowing the removal of remaining thick material and the insertion of a cleaning body when required.

65. (new) A process according claim 64, further comprising providing the operational position at the inlet position of the control slide.

66. (new) A process according to claim 64, further comprising providing a safety device for preventing the starting of the control slide, and activating said safety device during the removal and/or insertion process.

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67. (new) A process according to claim 47, wherein the lifting cylinders are located in parallel next to the control slides, said cylinders being coupled with the slides via consoles, and the guidance structure including the control slide guides for the consoles.